Statement of Work

by the AGS RSVP Project Office for Activities Related to the MECO Proton and Muon Beamlines

September 14, 2004

Introduction

This Statement of Work (SOW) is made to provide the details of the agreement between the MECO Project and the AGS RSVP Project Office at BNL concerning design efforts on several of the Proton and Muon Beamlines subsystems. Generally, this work will consist of conceptual design and installation plans for the following subsystems:

Neutron Absorber, Muon Beam Stop and Detector Train
Liaison Engineer and Physicist Support
Beamline Optical Design
Beamline Shielding Design
MDMG Support

This SOW covers the specific period of performance from September 15, 2004 through June 30, 2005.

Personnel & Responsibilities

- P. Pile (BNL) is the head of the AGS RSVP Project Office and the Principal Investigator on the subcontract through which UCI is providing the funds to carry out the work described in this SOW.
- William M. Morse (BNL) is the "Muon Beamline" team leader. He is responsible for final editing of the design report for the "Neutron Absorber, Muon Beam Stop and Detector Train" and ensuring that the proposed design of this system meets the physics requirements for MECO.
- P. Wanderer (BNL) is a Senior Physicist in the Superconducting Magnet Division (AM). He is responsible to follow progress on the two tasks of the cryogenic engineer, L. Jia, and act as liaison while he is in Beijing, collect experience of BNL Magnet Division on topics that overlap with the MECO magnet system, and participate in review of vendor responses to RFP for the MECO magnet system.
- L. Jia (BNL) is a C-A Cryogenic Engineer working on the design for the use of 80K helium to cool the PS heat shield and documentation of C-A requirements for the operation of the MECO refrigerator by C-A staff.
- M. Hebert (UCI) is the MECO Project Manager. He is responsible for ensuring that all of the proposed system designs interface properly with one another and the rest of MECO's subsystems.
- D. Phillips (BNL) is the C-A Liaison Engineer for MECO. He is responsible for ensuring that the proposed designs interface properly with C-A subsystems and meet C-A safety and operational requirements.

- W. Meng (BNL) is the C-A Liaison Physicist for MECO. He is responsible for ensuring that the proposed designs meet C-A safety and operational requirements. He is also responsible for the physics requirements of “Beamline Shielding Design”.
- W. J. Leonhardt (BNL) is a Physics Dept. Senior Project Engineer who will design the “Neutron Absorber, Muon Beam Stop and Detector Train” subsystem. If required, he will direct the efforts of a Physics Dept. Designer working on this system and will draft the design report.
- Peter Nemethy (NYU) with William Morse will provide coordination with the project for the “Neutron Absorber, Muon Beam Stop and Detector Train” effort.
- P. Yamin (BNL) is the MECO responsible physicist for “Neutron Absorbers”.
- W. Molzon (UCI) will provide additional physics input as needed on behalf of the MECO collaboration.
- K. Brown (BNL) is the C-A Physicist responsible for “Beamline Optical Design”.
- K. Yip (BNL) is the C-A Physicist working on radiation shielding calculations for “Beamline Shielding Design”.
- TBD (BNL) is a C-A Department Designer(s) who will, under direction of the C-A engineers above, generate the drawings required for this SOW.

Deliverables

Neutron Absorber, Muon Beam Stop and Detector Train

The deliverable shall consist of a conceptual design report for the Neutron Absorber, Muon Beam Stop and Detector Train. The report shall include details of the interface with DS cryostat and the plan for installation and removal for access to the components. The report shall include one or more overview drawings of the support structure components and illustrate in detail their interfaces with the DS and other MECO subsystems. Drawings illustrating the installation and removal procedures shall be included. Additional drawings of specific details shall be included where appropriate.

Liaison Engineer and Physicist Support

The deliverable shall consist of developing MECO interfaces with the C-A Facility. Areas to be developed include safety requirements, layout, location, and development of facility infrastructure. Emphasis will be on requirements for the MECO Magnets.

Beamline Optical Design

The deliverable shall consist of the optical solution of the proton beam transport to the Production Target in the presence of the Production Solenoid field.

Beamline Shielding Design

The deliverable shall consist of a report and drawing of the beamline sidewall shielding and proton beam stop. The report shall include shielding calculations and labor and material estimates to fabricate and install the shielding.

MDMG Support

The deliverable shall consist of the following: 1) A preliminary design for the use of 80K helium to cool the PS heat shield. 2) A report documenting C-A requirements for the operation of the MECO refrigerator by C-A staff, including instrumentation and control protocols, provision for operation with RHIC refrigerator both on and off and staffing requirements. 3) Written reports on technical and contractual issues, as needed.

Costs

Project supported labor costs are listed below:

Name/Position	Labor (hr)	Salary Cost ($)	Overhead ($)	Total Cost ($)
W.J. Leonhardt / Mechanical Engineer (Physics)	265	20609	5610	26219
P. Wanderer / Physicist (AM)	85	7286	2714	10000
L. Jia / Engineer (C-A)	113	7286	2714	10000
K. Brown / Physicist (C-A)	338	29144	10856	40000
TBD/ Mechanical Designer(s) (C-A)	216	11657	4343	16000
W. Meng / Liaison Physicist (C-A)	232	20038	7462	27500
D. Phillips / Liaison Engineer (C-A)	310	20038	7462	27500
K. Yip / Physicist (C-A)	85	7286	2714	10000
Totals	1644	123344	43875	167219

Project supported materials and supplies costs are listed below:

Item	Direct Cost ($)	Overhead ($)	Total Cost ($)
Travel (Physics)	3000	777	3777
Totals	3000	777	3777

Schedule

Milestones for this period of performance are listed here:

Milestones	Date
Neutron Absorber, Beam Stop and Detector Train Conceptual Design Complete	06/30/05
80K Helium Cooling Design Complete	10/30/04
Report on C-A Requirements for MECO Refrigerator Complete	10/15/04
Beamline Optical Design Complete	3/31/05
Preliminary Beamline Sidewall Shielding Design Complete	12/31/04
Beamline Sidewall Shielding Design Complete	5/31/05

Project Supplied Materials & Information

The MECO Project shall make available, via the project web site, MECO Reference Design information for the WBS items covered in this SOW.

Approvals

This Statement of Work has been reviewed and agreed upon by the following individuals:

W. Willis – RSVP Project Director

J. Kotcher – RSVP Project Deputy Director

P. Pile – AGS RSVP Project Manager

J. Hauser – C-A Assistant Chair for Administration

D. Lowenstein – C-A Chairman

W. Morse – Muon Beam Line Teamleader

R. Ernst – Physics Dept. Administration

H Gordon – Physics Dept. Associate Chair for High Energy

M. Hebert – MECO Project Manager

W. Molzon – MECO Spokesperson